APRIL/MAY 2024

DOPH34B/GEPH34B — MATERIAL SCIENCE

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What are isomorphous alloys?
2. Define phase equilibria.
3. Define stress and strain.
4. What are ceramic phase diagrams?
5. Give any two applications of biomaterials.
6. Write short notes on Protein.
7. Define SHM wave.
8. Differentiate linear and non-linear crystals.
9. Draw a neat sketch of PN junction diode.
10. List any two application of supercapacitors.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Explain briefly about Eutectoid and Peritectic reactions.

Or

(b) Illustrate the Concurrent phase transformations of ceramics with neat diagram.

12. (a) Write notes on advanced ceramics and ceramic phase diagrams.

Or

(b) Explain the Deformation of polymers.

13. (a) Describe the function of Biomaterials for imaging and diagnosis.

Or

(b) Discuss about Chemical structure and property of biomaterials.

14. (a) Discuss the process of Optical Mixing in NLO crystals.

Or

(b) Explain Parametric Generation of Light.

15. (a) Discuss the Polymer composites for solar cells and their application.

Or

(b) Compare Solid-state and molten solvent batteries.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Describe the Development of microstructure in eutectic alloys.

17. Elaborate the functions of Polymeric biomaterials in biomedical applications.

18. Discuss about the Polymerization mechanism and structures of polymers.

19. Explain nonlinear optical materials.

20. Write an detailed note on device fabrication and characterization of solar cells.

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